

# Exhibit 16

Expert Report – Highly Confidential

**IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF CALIFORNIA**

*PEOPLE OF THE STATE OF CALIFORNIA,*  
*et al.,*  
Plaintiffs,

v.

*META PLATFORMS, INC, Instagram, LLC,*  
*Meta Payments, Inc., Meta Platforms*  
*Technologies, LLC., et al.,*  
Defendants

IN RE: SOCIAL MEDIA ADOLESCENT  
ADDICTION/PERSONAL INJURY  
PRODUCTS LIABILITY LITIGATION

THIS DOCUMENT RELATES TO:  
4:23-cv-05448

MDL No. 3047

Case No. 4:23-cv-05448-YGR

Judge: Hon. Yvonne Gonzalez Rogers

Magistrate Judge: Hon. Peter H. Kang

**CORRECTED TRIAL REPORT OF PATRICK MCDANIEL  
DECEMBER 15, 2025**

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|                    |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| META3047MDL_VOL211 | Checkpointing Table             | Contains data on U.S. Facebook and Instagram accounts that were placed in an age checkpoint for suspected underage use. The underlying table was queried for the period from 02/01/2016 through 04/01/2024. <sup>311</sup>                                                                                                                                                                                                                            |
| META3047MDL_VOL218 | U13 Table 3                     | Contains data for violation types associated with underage use (and “violating actor network” <sup>312</sup> violations) that led to enforcement actions (enforcements were not limited to those that stemmed from user reports in this volume), where the account is predicted to be from the United States. The underlying table was queried from 10/01/2017 to 04/01/2024.                                                                         |
| META3047MDL_VOL245 | Supplemental Table 1            | Contains reports for violation types associated with underage use, where the reporter is predicted to be from the United States. The underlying table was queried from 08/20/2013 through 11/27/2024.                                                                                                                                                                                                                                                 |
| META3047MDL_VOL245 | Incomplete Supplemental Table 2 | Contains reports for violation types associated with underage use, where the account that was reported is predicted to be from the United States. For reports of underage users, the reports are limited to those submitted through the “shortened underage reporting flow” (aka SURF). <sup>313</sup> The underlying table was queried from 06/24/2022 through 12/11/2024. This table, inadvertently <sup>314</sup> did not include certain records. |
| META3047MDL_VOL245 | Incomplete Supplemental Table 3 | Contains data for violation types associated with underage use that led to enforcement actions, where enforcements (inadvertently <sup>315</sup> ) stemmed from user reports, where the account that was the subject of the enforcement is predicted to be from the United States. The underlying table was queried from 10/17/2017 to 04/30/2024.                                                                                                    |
| META3047MDL_VOL258 | Supplemental Table 3            | Contains data for violation types associated with underage use that led to enforcement actions, where enforcements did not stem from user reports, where the account that was the subject of the enforcement is predicted to be from the United States. The underlying table was queried from 10/01/2017 to 04/30/2024.                                                                                                                               |
| META3047MDL_VOL261 | Supplemental Table 2            | Contains reports for a variety of violation types, where the account that was reported is predicted to be from the United States. For reports of underage users, the reports are limited to those submitted through the “shortened underage reporting flow” (aka SURF). <sup>316</sup> The underlying table was queried from 06/24/2022 through 12/11/2024.                                                                                           |
| META3047MDL_VOL263 | IG-to-IG Softmatch Table        | Contains soft-match predictions for 05/24/25, 06/07/25, 06/23/25, and 07/06/25 of Instagram accounts that may belong to the same user.                                                                                                                                                                                                                                                                                                                |
| META3047MDL_VOL264 | FB-to-IG Softmatch Table        | Contains soft-match predictions for 04/14/25, 05/11/25, 06/07/25, and 07/06/25 of Facebook and Instagram accounts that may belong to the same user.                                                                                                                                                                                                                                                                                                   |
| META3047MDL_VOL265 | FB-to-FB Clustering Table       | Contains soft-match predictions for 04/14/25, 05/11/25, 06/07/25, and 07/6/25 of Facebook accounts that may belong to the same user.                                                                                                                                                                                                                                                                                                                  |
| META3047MDL_VOL269 | Very Recent Table 1             | Contains reports for violation types associated with underage use from 04/09/2025 through 07/14/2025, where the reporter or account being reported are predicted to be from the United States, or where those geography fields have “unknown” geography values.                                                                                                                                                                                       |
| META3047MDL_VOL269 | Very Recent Table 2             | Contains reports for violation types associated with underage use from 04/09/2025 through 07/14/2025, where the reporter or account being reported are predicted to be from the United States, or where those geography fields have “unknown” geography values. For reports of                                                                                                                                                                        |

<sup>311</sup> Blanaru Dep. Ex. 1, at 1.

<sup>312</sup> “Violating actor network” is the violation type associated with accounts that have been linked to other accounts that have been found to violate Meta’s policies. See 2025.04.04 Meta Ltr. re META3047MDL\_VOL218.pdf; August 5, 2025 Correspondence from Philip Irwin, outside counsel for Meta.

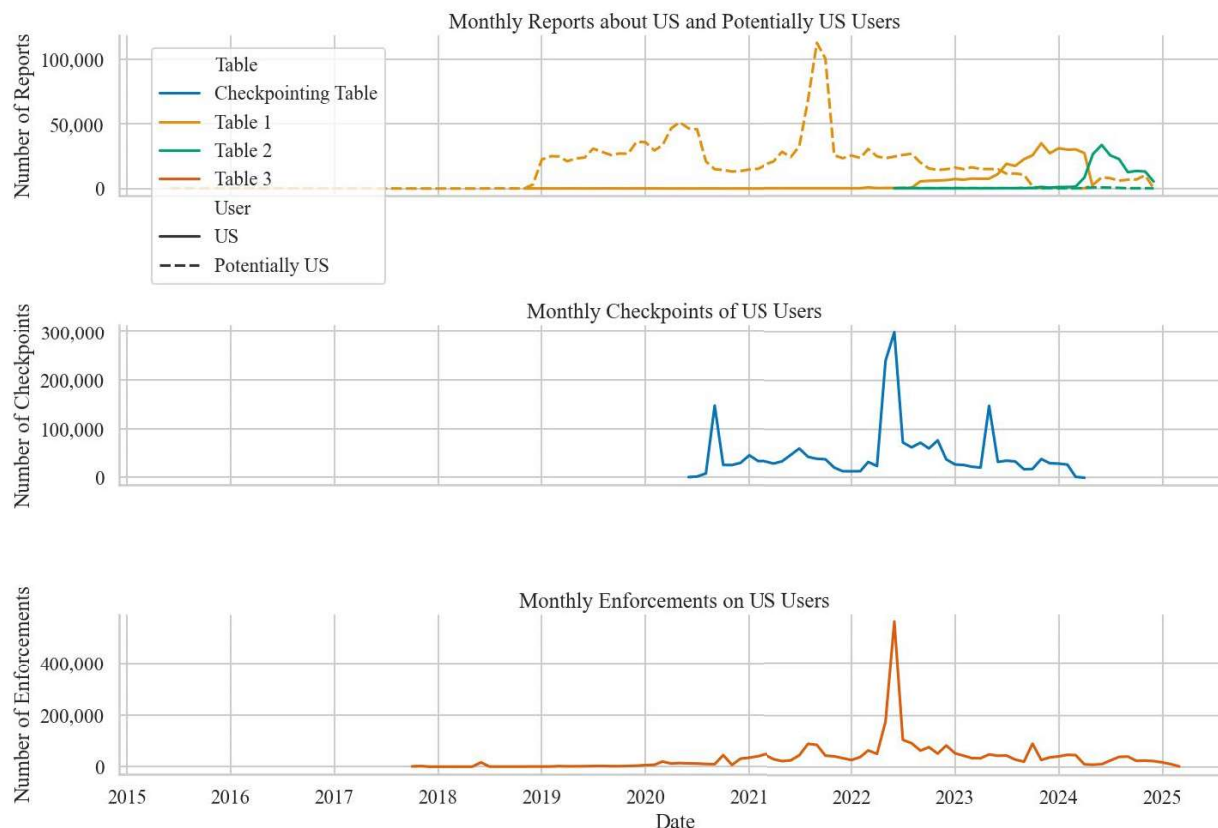
<sup>313</sup> Blanaru Dep. Tr. 21:10-11, 23:14-20.

<sup>314</sup> (Incomplete) Supplemental Table 2 (Volume 245) was inadvertently produced with missing records—Supplemental Table 2 (Volume 261) corrected this, Blanaru Dep. Ex. 1 at 1.

<sup>315</sup> (Incomplete) Supplemental Table 3 (Volume 245) was inadvertently produced with enforcements that were limited to those arising from user reports—Supplemental Table 3 (Volume 258) corrected this, Blanaru Dep. Ex. 1 at 1.

<sup>316</sup> Blanaru Dep. Tr. 21:10-11, 23:14-20.

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**Figure 5 - Total Reports, Checkpoints, and Enforcements Over Time**

174. In conclusion, my analysis shows that there are relatively few state-level geographic predictions among the reporting, enforcement, and checkpointing data, but generally larger portions of US-level geography (and potential US geography in Table 1). Also, there are very few reports on underage US users prior to mid-2022 (the vast majority of underage reports constitute potential US users) and there is no checkpointing data prior to mid-2020. Finally, the large spike in enforcements and checkpoints around mid-2022 corresponds with the time period of mandatory age collection on Instagram.<sup>329</sup>

<sup>329</sup> META3047MDL-012-00000036 at -039; see also META3047MDL-110-00000078 at -079.

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| Table                                  | Unique Users |
|----------------------------------------|--------------|
| Checkpointing Table (entity_id hashed) | 1,810,035    |
| Table 3 (entity rid hashed)            | 105,175      |
| Total                                  | 1,915,210    |

**Table 40 - Number of Checkpointed Users**

236. Finally, below is a table that shows the state-level jurisdictions of these users.

| Jurisdiction | Table               | Checkpoints |
|--------------|---------------------|-------------|
| US           | Checkpointing Table | 1,766,761   |
| US AR        | Checkpointing Table | 415         |
| US CA        | Checkpointing Table | 18,652      |
| US CO        | Checkpointing Table | 2,838       |
| US CT        | Checkpointing Table | 366         |
| US DE        | Checkpointing Table | 3           |
| US FL        | Checkpointing Table | 63          |
| US IL        | Checkpointing Table | 1,763       |
| US LA        | Checkpointing Table | 11          |
| US MT        | Checkpointing Table | 2           |
| US NV        | Checkpointing Table | 15          |
| US OH        | Checkpointing Table | 390         |
| US OR        | Checkpointing Table | 5           |
| US TX        | Checkpointing Table | 13,515      |
| US UT        | Checkpointing Table | 2,063       |
| US VA        | Checkpointing Table | 3,156       |
| US WA        | Checkpointing Table | 18          |
|              | Total               | 1,810,036   |

**Table 41- Number of Checkpointed Users (via Checkpointing Table) by State**

| Jurisdiction | Table   | Enforcements |
|--------------|---------|--------------|
| US           | Table 3 | 82,436       |
| US AK        | Table 3 | 32           |
| US AL        | Table 3 | 295          |
| US AR        | Table 3 | 210          |
| US AZ        | Table 3 | 381          |
| US CA        | Table 3 | 4,094        |
| US CO        | Table 3 | 283          |
| US CT        | Table 3 | 224          |
| US DC        | Table 3 | 66           |
| US DE        | Table 3 | 79           |
| US FL        | Table 3 | 1,824        |
| US GA        | Table 3 | 1,169        |
| US HI        | Table 3 | 122          |
| US IA        | Table 3 | 89           |
| US ID        | Table 3 | 66           |
| US IL        | Table 3 | 874          |
| US IN        | Table 3 | 345          |
| US KS        | Table 3 | 104          |
| US KY        | Table 3 | 218          |
| US LA        | Table 3 | 509          |
| US MA        | Table 3 | 276          |
| US MD        | Table 3 | 464          |
| US ME        | Table 3 | 36           |
| US MI        | Table 3 | 438          |

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|       |         |         |
|-------|---------|---------|
| US MN | Table 3 | 209     |
| US MO | Table 3 | 252     |
| US MS | Table 3 | 265     |
| US MT | Table 3 | 38      |
| US NC | Table 3 | 680     |
| US ND | Table 3 | 18      |
| US NE | Table 3 | 79      |
| US NH | Table 3 | 43      |
| US NJ | Table 3 | 547     |
| US NM | Table 3 | 63      |
| US NV | Table 3 | 354     |
| US NY | Table 3 | 1,063   |
| US OH | Table 3 | 783     |
| US OK | Table 3 | 193     |
| US OR | Table 3 | 191     |
| US PA | Table 3 | 635     |
| US RI | Table 3 | 38      |
| US SC | Table 3 | 335     |
| US SD | Table 3 | 17      |
| US TN | Table 3 | 435     |
| US TX | Table 3 | 2,679   |
| US UT | Table 3 | 220     |
| US VA | Table 3 | 701     |
| US VT | Table 3 | 24      |
| US WA | Table 3 | 409     |
| US WI | Table 3 | 210     |
| US WV | Table 3 | 50      |
| US WY | Table 3 | 10      |
|       | Total   | 105,175 |

**Table 42 - Number of Checkpointed Users (via Table 3) by State**

237. My analysis shows that Meta’s age detection systems are heavily reliant on users self-admitting that they are underage—all of the top-five reasons in the Checkpointing Table (representing ~80% of all checkpoints) are related to users who admit they are underage in some way (e.g., “DOBUpdate”, “Admittance via Account Centre”, etc.).<sup>366</sup>

#### 5.5.4 Results on User Account Disables

238. This analysis of Meta’s productions focuses on US users that have been deactivated (often described as being “disabled” in the data) for being

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<sup>366</sup> Blanaru Dep. 51:3-52:25; Blanaru Dep. Ex. 1 at 4; see also META3047MDL-037-00084734 (“AGE\_COLLECTION”).

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underage. Here, I analyze the number of users that were disabled for being underage, based on elapsed time, and specific actions that led to the account being disabled among other details. This section relies on Checkpointing Table. Throughout this section, I apply the same geographic and underage filters described above.

239. **Q1. How many unique US accounts are disabled by Meta for being underage, and how long did it take users to be disabled?**

240. To identify users who are disabled for being underage, the value “disabled” must be present in the “decision” field.<sup>367</sup> Below is a table showing the number of disables within Checkpointing Table.

| Table               | Disables           |
|---------------------|--------------------|
| Checkpointing Table | 1,481,631 (100.0%) |
| Total               | 1,481,631 (100.0%) |

**Table 43 - Number of Account Disables**

241. Next, to measure the number of disables per month, I assume the field “decision\_time” refers to the time at which a decision about the checkpointed user is made (and when a decision is made to disable a user, I assume the user is disabled immediately). Below is a table showing the number of disables per month.

| Month   | Number of Disables |
|---------|--------------------|
| 2020-06 | 5 (<0.1%)          |
| 2020-07 | 533 (<0.1%)        |
| 2020-08 | 1,114 (0.1%)       |
| 2020-09 | 4,470 (0.3%)       |

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<sup>367</sup> Blanaru Dep. 37:15-38:2.

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|         |                 |
|---------|-----------------|
| 2020-10 | 135,767 (9.2%)  |
| 2020-11 | 18,943 (1.3%)   |
| 2020-12 | 17,865 (1.2%)   |
| 2021-01 | 20,521 (1.4%)   |
| 2021-02 | 29,314 (2.0%)   |
| 2021-03 | 27,921 (1.9%)   |
| 2021-04 | 20,903 (1.4%)   |
| 2021-05 | 15,476 (1.0%)   |
| 2021-06 | 18,558 (1.3%)   |
| 2021-07 | 37,751 (2.5%)   |
| 2021-08 | 47,839 (3.2%)   |
| 2021-09 | 37,652 (2.5%)   |
| 2021-10 | 31,023 (2.1%)   |
| 2021-11 | 26,767 (1.8%)   |
| 2021-12 | 21,967 (1.5%)   |
| 2022-01 | 10,079 (0.7%)   |
| 2022-02 | 9,339 (0.6%)    |
| 2022-03 | 10,504 (0.7%)   |
| 2022-04 | 27,421 (1.9%)   |
| 2022-05 | 21,631 (1.5%)   |
| 2022-06 | 173,103 (11.7%) |
| 2022-07 | 88,704 (6.0%)   |
| 2022-08 | 36,313 (2.5%)   |
| 2022-09 | 26,578 (1.8%)   |
| 2022-10 | 44,413 (3.0%)   |
| 2022-11 | 34,402 (2.3%)   |
| 2022-12 | 60,945 (4.1%)   |
| 2023-01 | 23,564 (1.6%)   |
| 2023-02 | 11,968 (0.8%)   |
| 2023-03 | 390 (<0.1%)     |
| 2023-04 | 138 (<0.1%)     |
| 2023-05 | 193 (<0.1%)     |
| 2023-06 | 197 (<0.1%)     |
| 2023-07 | 425 (<0.1%)     |
| 2023-08 | 4,435 (0.3%)    |
| 2023-09 | 3,732 (0.3%)    |
| 2023-10 | 241,803 (16.3%) |
| 2023-11 | 18,734 (1.3%)   |
| 2023-12 | 38,354 (2.6%)   |
| 2024-01 | 28,140 (1.9%)   |
| 2024-02 | 25,059 (1.7%)   |



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|         |               |
|---------|---------------|
| 2024-03 | 26,677 (1.8%) |
| 2024-04 | 1 (<0.1%)     |
| Total   | 1,481,631     |

**Table 44 - Number of Monthly Account Disables**

242. As used in the prior section, I use the fields “entity\_attr\_entity\_rid\_hashed” and “entity\_attr\_primary\_profile\_rid\_hashed” in Checkpointing Table to identify users. Below is a table, using same the approach described above, that shows the number of unique users that are disabled.

| Table                                  | Unique Users       |
|----------------------------------------|--------------------|
| Checkpointing Table (entity_id_hashed) | 1,322,210 (100.0%) |
| Total                                  | 1,322,210 (100.0%) |

**Table 45 - Number of Unique Users Disabled**

243. Moreover, below is a table that shows the state-level jurisdictions of these users.

| Jurisdiction | Table               | Checkpoints |
|--------------|---------------------|-------------|
| US           | Checkpointing Table | 1,283,555   |
| US AR        | Checkpointing Table | 333         |
| US CA        | Checkpointing Table | 16,841      |
| US CO        | Checkpointing Table | 2,652       |
| US CT        | Checkpointing Table | 245         |
| US FL        | Checkpointing Table | 2           |
| US IL        | Checkpointing Table | 1,382       |
| US NV        | Checkpointing Table | 2           |
| US OH        | Checkpointing Table | 278         |
| US TX        | Checkpointing Table | 12,116      |
| US UT        | Checkpointing Table | 1,959       |
| US VA        | Checkpointing Table | 2,844       |
| US WA        | Checkpointing Table | 1           |
|              | Total               | 1,322,210   |

**Table 46 - Number of Unique Users Disabled by State**

244. For measuring the time taken to be disabled, I assume the field “enrollment\_time” refers to the time a user is checkpointed and “decision\_time” refers to the time at which a decision about the checkpointed user is made. Thus, the duration at which a user is checkpointed can be

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“creator\_rid\_hashed”, “entity\_id\_hashed”, “entity\_rid\_hashed”, and “owner\_rid\_hashed”). In this way, such “Candidate IDs” are not checkpointed, not enforced, and have not had an enforcement propagated to them (and therefore, are currently allowed to remain on Meta’s platforms).

281. Finally, I verified that at least one of the IDs<sup>386</sup> in the pair had a US jurisdiction<sup>387</sup>(via “enrollment\_conformed\_entity\_dimensions.jurisdictions” in Very Recent Checkpointing Table for Disabled IDs and via Softmatch Jurisdiction Table for Candidate IDs). I call such IDs “Unenforced IDs” as they represent IDs that are not enforced or checkpointed, but are soft-matched (over a threshold) to an ID that was disabled for being underage, and either has a US jurisdiction or is soft-matched to an ID that does. Finally, across all pairs with an Unenforced ID, I computed the number of unique Unenforced and Disabled IDs. Below are tables that show the results of the filters described above for each of Meta’s soft-match models.

| Table | Softmatch Pairs | Pairs over Threshold | Pairs with a Disabled Account | Unenforced Softmatch Pairs | Unenforced Accounts | Disabled Accounts |
|-------|-----------------|----------------------|-------------------------------|----------------------------|---------------------|-------------------|
|-------|-----------------|----------------------|-------------------------------|----------------------------|---------------------|-------------------|

<sup>386</sup> Note that Meta described Very Recent Checkpointing Table as “data relating to U.S. Facebook and Instagram accounts.” Accordingly, I consider these users to be US users. See 2025.08.15 Meta Ltr. re META3047MDL\_VOL270.pdf. However, I observed that some of these users had values in the subfield “jurisdictions” from the field “enrollment\_conformed\_entity\_dimensions” indicating foreign geography and thus, to be conservative, I filtered them out in my analysis per these steps.

<sup>387</sup> I performed this check for IG-to-IG Softmatch Table and FB-to-IG Softmatch Table. FB-to-FB Clustering Table has a “country” field which is “US” for >99.95% of rows.

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|                           |               |               |         |         |        |        |
|---------------------------|---------------|---------------|---------|---------|--------|--------|
| FB-to-FB Clustering Table | 176,564,405   | 176,564,405   | 31,476  | 30,811  | 15,748 | 13,106 |
| FB-to-IG Softmatch Table  | 2,999,628,582 | 1,282,987,972 | 57,202  | 49,483  | 47,748 | 21,797 |
| IG-to-IG Softmatch Table  | 4,613,904,488 | 2,734,812,541 | 125,499 | 119,095 | 72,320 | 18,397 |

**Table 57 - Soft-match Analysis Results**

282. Moreover, below are tables of the state-level jurisdictions of Disabled Accounts.

| FB-to-FB Clustering Table<br>Disabled Account Jurisdictions | Count |
|-------------------------------------------------------------|-------|
| US                                                          | 1,837 |
| US AK                                                       | 38    |
| US AL                                                       | 191   |
| US AR                                                       | 114   |
| US AZ                                                       | 455   |
| US CA                                                       | 1,215 |
| US CO                                                       | 164   |
| US CT                                                       | 65    |
| US DC                                                       | 29    |
| US DE                                                       | 27    |
| US FL                                                       | 497   |
| US GA                                                       | 308   |
| US HI                                                       | 39    |
| US IA                                                       | 115   |
| US ID                                                       | 45    |
| US IL                                                       | 261   |
| US IN                                                       | 273   |
| US KS                                                       | 108   |
| US KY                                                       | 270   |
| US LA                                                       | 148   |
| US MA                                                       | 251   |
| US MD                                                       | 137   |
| US ME                                                       | 49    |
| US MI                                                       | 273   |
| US MN                                                       | 160   |
| US MO                                                       | 198   |
| US MS                                                       | 125   |
| US MT                                                       | 27    |
| US NC                                                       | 318   |
| US ND                                                       | 36    |
| US NE                                                       | 69    |
| US NH                                                       | 35    |
| US NJ                                                       | 151   |
| US NM                                                       | 59    |
| US NV                                                       | 68    |
| US NY                                                       | 1,224 |
| US OH                                                       | 397   |
| US OK                                                       | 135   |

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|       |     |
|-------|-----|
| US_OR | 191 |
| US_PA | 365 |
| US_RI | 17  |
| US_SC | 180 |
| US_SD | 25  |
| US_TN | 268 |
| US_TX | 682 |
| US_UT | 73  |
| US_VA | 613 |
| US_VT | 26  |
| US_WA | 395 |
| US_WI | 199 |
| US_WV | 134 |
| US_WY | 27  |

**Table 58 - FB-to-FB Clustering Table Disabled Accounts by State**

| FB-to-IG Softmatch Table<br>Disabled Account Jurisdictions | Count |
|------------------------------------------------------------|-------|
| US                                                         | 1,174 |
| US_AK                                                      | 43    |
| US_AL                                                      | 413   |
| US_AR                                                      | 210   |
| US_AZ                                                      | 474   |
| US_CA                                                      | 2,426 |
| US_CO                                                      | 289   |
| US_CT                                                      | 163   |
| US_DC                                                      | 53    |
| US_DE                                                      | 66    |
| US_FL                                                      | 1,522 |
| US_GA                                                      | 939   |
| US_HI                                                      | 130   |
| US_IA                                                      | 143   |
| US_ID                                                      | 82    |
| US_IL                                                      | 642   |
| US_IN                                                      | 384   |
| US_KS                                                      | 196   |
| US_KY                                                      | 338   |
| US_LA                                                      | 484   |
| US_MA                                                      | 301   |
| US_MD                                                      | 437   |
| US_ME                                                      | 53    |
| US_MI                                                      | 526   |
| US_MN                                                      | 266   |
| US_MO                                                      | 327   |
| US_MS                                                      | 276   |
| US_MT                                                      | 50    |

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|       |       |
|-------|-------|
| US_NC | 770   |
| US_ND | 44    |
| US_NE | 118   |
| US_NH | 50    |
| US_NJ | 548   |
| US_NM | 97    |
| US_NV | 239   |
| US_NY | 1,088 |
| US_OH | 735   |
| US_OK | 261   |
| US_OR | 145   |
| US_PA | 701   |
| US_RI | 54    |
| US_SC | 377   |
| US_SD | 32    |
| US_TN | 553   |
| US_TX | 2,060 |
| US_UT | 165   |
| US_VA | 525   |
| US_VT | 23    |
| US_WA | 376   |
| US_WI | 308   |
| US_WV | 93    |
| US_WY | 28    |

**Table 59 - FB-to-IG Softmatch Clustering Table Disabled Accounts by State**

| IG-to-IG Softmatch Table<br>Disabled Account Jurisdictions | Count |
|------------------------------------------------------------|-------|
| US                                                         | 1,093 |
| US_AK                                                      | 18    |
| US_AL                                                      | 289   |
| US_AR                                                      | 115   |
| US_AZ                                                      | 366   |
| US_CA                                                      | 2,394 |
| US_CO                                                      | 211   |
| US_CT                                                      | 128   |
| US_DC                                                      | 82    |
| US_DE                                                      | 62    |
| US_FL                                                      | 1,339 |
| US_GA                                                      | 904   |
| US_HI                                                      | 124   |
| US_IA                                                      | 67    |

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|       |       |
|-------|-------|
| US_ID | 63    |
| US_IL | 589   |
| US_IN | 250   |
| US_KS | 119   |
| US_KY | 198   |
| US_LA | 430   |
| US_MA | 254   |
| US_MD | 436   |
| US_ME | 26    |
| US_MI | 422   |
| US_MN | 177   |
| US_MO | 220   |
| US_MS | 211   |
| US_MT | 33    |
| US_NC | 592   |
| US_ND | 25    |
| US_NE | 69    |
| US_NH | 34    |
| US_NJ | 565   |
| US_NM | 80    |
| US_NV | 245   |
| US_NY | 946   |
| US_OH | 521   |
| US_OK | 147   |
| US_OR | 90    |
| US_PA | 563   |
| US_RI | 43    |
| US_SC | 304   |
| US_SD | 17    |
| US_TN | 380   |
| US_TX | 2,020 |
| US_UT | 145   |
| US_VA | 433   |
| US_VT | 12    |
| US_WA | 268   |
| US_WI | 227   |
| US_WV | 42    |
| US_WY | 9     |

**Table 60 - IG-to-IG Softmatch Table Disabled Accounts by State**

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283. This analysis shows the ability of Meta’s soft-matching models to identify accounts likely to belong to underage users whose accounts Meta has not removed from its platforms. With underage enforcement data from only a three-month period, I found tens of thousands of accounts that Meta had disabled for being underage, which Meta’s systems predicted were linked to tens of thousands more accounts that Meta ignored. This demonstrates a missed opportunity for Meta to use its existing data to detect and remove underage users.

284. **Q2. How many estimated accounts would be disabled by Meta if it had propagated soft-link enforcements for underage accounts?**

285. This question asks how many underage accounts Meta could have disabled for being soft-matched to an account that was disabled for being underage, if Meta enforced its age policies against soft-matched accounts.

286. I estimate the number of accounts Meta would have disabled by considering the percentage of potential enforcements that are due to soft-matching and multiply this percentage by the total number of enforcements in the past (using a similar methodology as my analysis of possible hard-link enforcements). I define a “soft-match” enforcement to be semantically identical to a hard-link enforcement: an account that is soft-matched to another account that was disabled to be underage. In other words, I consider

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the number of “Disabled Accounts” computed above when computing the percentage of soft-match enforcements. I assume that soft-matching rates are relatively consistent before April 2025, the earliest date for which Meta produced soft-matching data.

287. Next, below is a table that contains a summary of the percentages that I used to provide my estimates.

| Soft-match Table          | % Disables | % Enforcements |
|---------------------------|------------|----------------|
| FB-to-FB Clustering Table | 3.0%       | 0.7%           |
| FB-to-IG Softmatch Table  | 5.0%       | 1.1%           |
| IG-to-IG Softmatch Table  | 4.2%       | 0.9%           |

**Table 61 - Soft-match Percentages for each Table**

288. Below is a table containing the estimated number of potential accounts that could have been disabled or subject to enforcement through soft-matching on a monthly basis for Table 3 and Checkpointing Table. These figures were derived by multiplying the total number of underage account disables or enforcements per month by the respective percentages displayed above.

| Month      | Total Disables | Est. Number of Soft-match Disables via FB-to-FB Clustering Table | Est. Number of Soft-match Disables via FB-to-IG Softmatch Table | Est. Number of Soft-match Disables via IG-to-IG Softmatch Table |
|------------|----------------|------------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|
| 2020-06-01 | 826            | 24                                                               | 41                                                              | 34                                                              |
| 2020-07-01 | 1,717          | 51                                                               | 85                                                              | 72                                                              |
| 2020-08-01 | 7,533          | 226                                                              | 377                                                             | 318                                                             |
| 2020-09-01 | 143,515        | 4,321                                                            | 7,187                                                           | 6,066                                                           |
| 2020-10-01 | 22,954         | 691                                                              | 1,149                                                           | 970                                                             |
| 2020-11-01 | 22,015         | 662                                                              | 1,102                                                           | 930                                                             |
| 2020-12-01 | 27,598         | 831                                                              | 1,382                                                           | 1,166                                                           |
| 2021-01-01 | 40,441         | 1,217                                                            | 2,025                                                           | 1,709                                                           |
| 2021-02-01 | 26,866         | 809                                                              | 1,345                                                           | 1,135                                                           |
| 2021-03-01 | 25,209         | 759                                                              | 1,262                                                           | 1,065                                                           |
| 2021-04-01 | 20,222         | 608                                                              | 1,012                                                           | 854                                                             |
| 2021-05-01 | 25,770         | 776                                                              | 1,290                                                           | 1,089                                                           |
| 2021-06-01 | 33,344         | 1,004                                                            | 1,669                                                           | 1,409                                                           |
| 2021-07-01 | 52,135         | 1,569                                                            | 2,611                                                           | 2,203                                                           |
| 2021-08-01 | 34,860         | 1,049                                                            | 1,745                                                           | 1,473                                                           |



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|            |           |        |        |        |
|------------|-----------|--------|--------|--------|
| 2021-09-01 | 31,596    | 951    | 1,582  | 1,335  |
| 2021-10-01 | 31,660    | 953    | 1,585  | 1,338  |
| 2021-11-01 | 17,353    | 522    | 869    | 733    |
| 2021-12-01 | 10,628    | 320    | 532    | 449    |
| 2022-01-01 | 10,537    | 317    | 527    | 445    |
| 2022-02-01 | 10,690    | 321    | 535    | 451    |
| 2022-03-01 | 29,821    | 898    | 1,493  | 1,260  |
| 2022-04-01 | 21,649    | 651    | 1,084  | 915    |
| 2022-05-01 | 128,304   | 3,863  | 6,425  | 5,423  |
| 2022-06-01 | 79,854    | 2,404  | 3,999  | 3,375  |
| 2022-07-01 | 35,057    | 1,055  | 1,755  | 1,481  |
| 2022-08-01 | 28,636    | 862    | 1,434  | 1,210  |
| 2022-09-01 | 42,848    | 1,290  | 2,145  | 1,811  |
| 2022-10-01 | 35,176    | 1,059  | 1,761  | 1,486  |
| 2022-11-01 | 60,005    | 1,806  | 3,005  | 2,536  |
| 2022-12-01 | 22,196    | 668    | 1,111  | 938    |
| 2023-01-01 | 12,328    | 371    | 617    | 521    |
| 2023-02-01 | 4,118     | 124    | 206    | 174    |
| 2023-03-01 | 3,705     | 111    | 185    | 156    |
| 2023-04-01 | 1,523     | 45     | 76     | 64     |
| 2023-05-01 | 131,675   | 3,965  | 6,594  | 5,565  |
| 2023-06-01 | 29,230    | 880    | 1,463  | 1,235  |
| 2023-07-01 | 32,447    | 977    | 1,625  | 1,371  |
| 2023-08-01 | 31,388    | 945    | 1,571  | 1,326  |
| 2023-09-01 | 15,970    | 480    | 799    | 675    |
| 2023-10-01 | 16,489    | 496    | 825    | 696    |
| 2023-11-01 | 36,871    | 1,110  | 1,846  | 1,558  |
| 2023-12-01 | 28,333    | 853    | 1,418  | 1,197  |
| 2024-01-01 | 26,939    | 811    | 1,349  | 1,138  |
| 2024-02-01 | 24,005    | 722    | 1,202  | 1,014  |
| 2024-03-01 | 103       | 3      | 5      | 4      |
| Total      | 1,476,139 | 44,430 | 73,905 | 62,373 |

**Table 62 - Estimated Number of Account Disables due to Soft-matching per Month**

| Month      | Total Enforcements | Est. Number of Soft-match Enforcements via FB-to-FB Clustering Table | Est. Number of Soft-match Enforcements via FB-to-IG Softmatch Table | Est. Number of Soft-match Enforcements via IG-to-IG Softmatch Table |
|------------|--------------------|----------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|
| 2017-10-01 | 1,258              | 8                                                                    | 14                                                                  | 11                                                                  |
| 2017-11-01 | 2,431              | 16                                                                   | 27                                                                  | 22                                                                  |
| 2017-12-01 | 57                 | 0                                                                    | 0                                                                   | 0                                                                   |
| 2018-01-01 | 50                 | 0                                                                    | 0                                                                   | 0                                                                   |
| 2018-02-01 | 61                 | 0                                                                    | 0                                                                   | 0                                                                   |
| 2018-03-01 | 112                | 0                                                                    | 1                                                                   | 1                                                                   |
| 2018-04-01 | 164                | 1                                                                    | 1                                                                   | 1                                                                   |
| 2018-05-01 | 161                | 1                                                                    | 1                                                                   | 1                                                                   |
| 2018-06-01 | 16,630             | 111                                                                  | 185                                                                 | 156                                                                 |
| 2018-07-01 | 368                | 2                                                                    | 4                                                                   | 3                                                                   |
| 2018-08-01 | 302                | 2                                                                    | 3                                                                   | 2                                                                   |
| 2018-09-01 | 341                | 2                                                                    | 3                                                                   | 3                                                                   |
| 2018-10-01 | 294                | 1                                                                    | 3                                                                   | 2                                                                   |
| 2018-11-01 | 479                | 3                                                                    | 5                                                                   | 4                                                                   |
| 2018-12-01 | 677                | 4                                                                    | 7                                                                   | 6                                                                   |
| 2019-01-01 | 602                | 4                                                                    | 6                                                                   | 5                                                                   |
| 2019-02-01 | 674                | 4                                                                    | 7                                                                   | 6                                                                   |
| 2019-03-01 | 2,140              | 14                                                                   | 23                                                                  | 20                                                                  |
| 2019-04-01 | 1,446              | 9                                                                    | 16                                                                  | 13                                                                  |
| 2019-05-01 | 1,514              | 10                                                                   | 16                                                                  | 14                                                                  |

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|            |         |       |       |       |
|------------|---------|-------|-------|-------|
| 2019-06-01 | 1,772   | 11    | 19    | 16    |
| 2019-07-01 | 2,586   | 17    | 28    | 24    |
| 2019-08-01 | 2,936   | 19    | 32    | 27    |
| 2019-09-01 | 1,949   | 13    | 21    | 18    |
| 2019-10-01 | 2,109   | 14    | 23    | 19    |
| 2019-11-01 | 2,934   | 19    | 32    | 27    |
| 2019-12-01 | 3,839   | 25    | 42    | 36    |
| 2020-01-01 | 5,753   | 38    | 64    | 54    |
| 2020-02-01 | 7,166   | 48    | 80    | 67    |
| 2020-03-01 | 19,729  | 132   | 220   | 186   |
| 2020-04-01 | 12,051  | 80    | 134   | 113   |
| 2020-05-01 | 13,914  | 93    | 155   | 131   |
| 2020-06-01 | 12,648  | 85    | 141   | 119   |
| 2020-07-01 | 11,993  | 80    | 134   | 113   |
| 2020-08-01 | 10,534  | 70    | 117   | 99    |
| 2020-09-01 | 9,684   | 65    | 108   | 91    |
| 2020-10-01 | 44,247  | 297   | 494   | 417   |
| 2020-11-01 | 6,862   | 46    | 76    | 64    |
| 2020-12-01 | 30,739  | 206   | 343   | 290   |
| 2021-01-01 | 34,453  | 231   | 385   | 325   |
| 2021-02-01 | 39,960  | 268   | 446   | 377   |
| 2021-03-01 | 48,618  | 326   | 543   | 458   |
| 2021-04-01 | 31,562  | 212   | 352   | 297   |
| 2021-05-01 | 23,908  | 160   | 267   | 225   |
| 2021-06-01 | 26,932  | 181   | 301   | 254   |
| 2021-07-01 | 46,378  | 311   | 518   | 437   |
| 2021-08-01 | 90,693  | 609   | 1,013 | 855   |
| 2021-09-01 | 86,429  | 580   | 966   | 815   |
| 2021-10-01 | 45,179  | 303   | 505   | 426   |
| 2021-11-01 | 42,529  | 285   | 475   | 401   |
| 2021-12-01 | 35,348  | 237   | 395   | 333   |
| 2022-01-01 | 28,141  | 189   | 314   | 265   |
| 2022-02-01 | 39,794  | 267   | 444   | 375   |
| 2022-03-01 | 65,126  | 437   | 728   | 614   |
| 2022-04-01 | 52,095  | 350   | 582   | 491   |
| 2022-05-01 | 175,801 | 1,181 | 1,965 | 1,658 |
| 2022-06-01 | 561,345 | 3,773 | 6,275 | 5,296 |
| 2022-07-01 | 106,006 | 712   | 1,185 | 1,000 |
| 2022-08-01 | 92,911  | 624   | 1,038 | 876   |
| 2022-09-01 | 64,315  | 432   | 718   | 606   |
| 2022-10-01 | 77,752  | 522   | 869   | 733   |
| 2022-11-01 | 52,925  | 355   | 591   | 499   |
| 2022-12-01 | 84,229  | 566   | 941   | 794   |
| 2023-01-01 | 54,158  | 364   | 605   | 510   |
| 2023-02-01 | 44,604  | 299   | 498   | 420   |
| 2023-03-01 | 35,620  | 239   | 398   | 336   |
| 2023-04-01 | 35,158  | 236   | 393   | 331   |
| 2023-05-01 | 49,713  | 334   | 555   | 469   |
| 2023-06-01 | 44,567  | 299   | 498   | 420   |
| 2023-07-01 | 45,649  | 306   | 510   | 430   |
| 2023-08-01 | 29,974  | 201   | 335   | 282   |
| 2023-09-01 | 21,788  | 146   | 243   | 205   |
| 2023-10-01 | 91,091  | 612   | 1,018 | 859   |
| 2023-11-01 | 28,387  | 190   | 317   | 267   |
| 2023-12-01 | 38,384  | 257   | 429   | 362   |
| 2024-01-01 | 42,163  | 283   | 471   | 397   |
| 2024-02-01 | 48,196  | 323   | 538   | 454   |
| 2024-03-01 | 47,081  | 316   | 526   | 444   |
| 2024-04-01 | 11,434  | 76    | 127   | 107   |

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|            |           |        |        |        |
|------------|-----------|--------|--------|--------|
| 2024-05-01 | 10,116    | 67     | 113    | 95     |
| 2024-06-01 | 12,132    | 81     | 135    | 114    |
| 2024-07-01 | 26,353    | 177    | 294    | 248    |
| 2024-08-01 | 40,098    | 269    | 448    | 378    |
| 2024-09-01 | 41,618    | 279    | 465    | 392    |
| 2024-10-01 | 25,054    | 168    | 280    | 236    |
| 2024-11-01 | 25,742    | 173    | 287    | 242    |
| 2024-12-01 | 24,117    | 162    | 269    | 227    |
| 2025-01-01 | 19,016    | 127    | 212    | 179    |
| 2025-02-01 | 11,987    | 80     | 133    | 113    |
| 2025-03-01 | 3,592     | 24     | 40     | 33     |
| Total      | 3,093,427 | 20,749 | 34,538 | 29,141 |

**Table 63 - Estimated Number of Enforcements Due to Soft-matching per Month**

289. This analysis represents an estimate of the magnitude of additional underage accounts that Meta could have detected by using its soft-matching techniques over the period for which Meta had produced data on underage enforcements. Based on the available data, I estimate that Meta could have detected tens of thousands of additional underage accounts on Facebook and Instagram, if it had queried its soft-matching data, as has done for years for disabling accounts for other types of policy violations or for commercial purposes.

**5.5.7 Results on Potential Bot/Scripting Attacks**

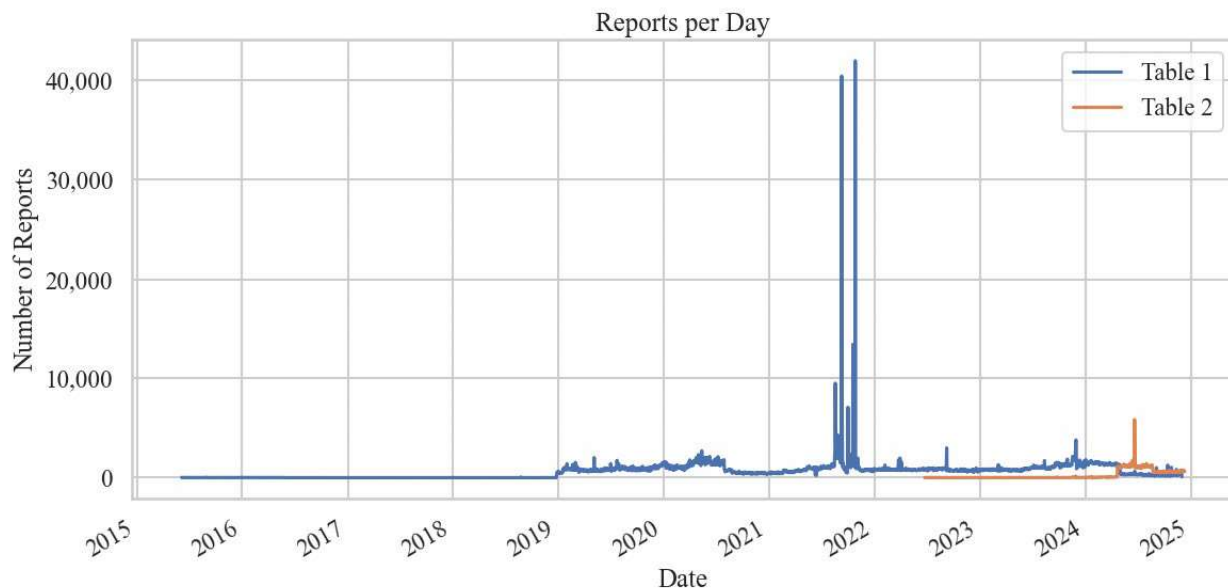
290. This analysis of Meta's productions focuses on detecting the presence of bot attacks on underage reports. This section relies on Table 1 and Table 2. Throughout this section, I apply the same underage (but not geographic) filters described above.

291. **Q1: What is the reporting load on Meta's systems?**

292. This question asks about the number of reports Meta has received over time.

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293. Below is a figure that shows the daily number of reports Meta has received via Table 1 and Table 2. The x-axis represents the date and the y-axis shows the number of reports received on a given day. The tables are differentiated by hue. As the graph shows, there is a large influx of reports near the end of 2021. I analyze this phenomenon subsequently. The range of dates from Meta’s reporting tables (for underage reports) span from 2015-06-05 to 2024-12-11.



**Figure 7 - Number of Reports on a Daily Basis**

294. **Q2: To what degree are accounts targeted for being reported as underage?**

295. This question asks about the maximal “fan-in” rate for reporters reporting accounts. Said alternatively, how many accounts are reported by multiple reporters?

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296. To identify users, I use the same fields as used prior: “deprecated\_responsible\_id\_hashed”, “entity\_attr\_id\_hashed”, “entity\_attr\_id\_rid\_hashed”, “object\_id\_hashed”, “object\_id\_v1\_hashed”, “object\_rid\_hashed”, and “responsible\_rid\_hashed” for Table 1 and “entity\_attr\_entity\_rid\_hashed” and “entity\_attr\_primary\_profile\_id\_hashed” in Table 2. To identify reporters, the fields “deprecated\_reporter\_id\_hashed” and “reporter\_rid\_hashed” refer to accounts that submitted the report in Table 1.<sup>388</sup> Conversely, the field “interactor\_attr\_interactor\_rid\_hashed” refers to accounts that submitted a report in Table 2.<sup>389</sup>

297. Next, I measured the number of accounts that only received one report (using the ID field that was most populated). Below is a table showing the number of accounts that receive one, two to thirty, or greater than thirty reports (and the volume of reports they constitute). A large proportion of accounts only receive one report (and constitute over half of all reports received by Meta).

| Table   | Receive <2 Reports                               | Receive 2-29 Reports                         | Receive ≥30 Reports                      |
|---------|--------------------------------------------------|----------------------------------------------|------------------------------------------|
| Table 1 | 1,291,127 IDs (88.4%), 1,291,127 Reports (61.5%) | 167,034 IDs (11.4%), 626,807 Reports (29.9%) | 2,554 IDs (0.2%), 179,944 Reports (8.6%) |
| Table 2 | 142,745 IDs (87.0%), 142,745 Reports (62.8%)     | 21,099 IDs (12.9%), 70,951 Reports (31.2%)   | 172 IDs (0.1%), 10,642 Reports (4.7%)    |

**Table 64 - Number of Accounts that Receive N Reports**

298. **Q3: To what degree are reporters submitting underage reports?**

<sup>388</sup> Ashley Simonsen, Corrected Meta Ltr re META3047MDL\_VOL245, Ltr from Counsel for Meta to Counsel of Record (Oct. 6, 2025), at 3.

<sup>389</sup> Id. at 5.

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299. This question asks about the maximal “fan-out” rate for reporters reporting accounts. Said alternatively, how many reporters are submitting reports against multiple accounts?
300. Using the same fields and approach described above, I now measure the number of reporters who only file one report (again, using the ID field that is most populated). Below is a table showing the number of reporters that submit one, two to thirty, or greater than thirty reports (and the volume of reports they constitute). A large proportion of reporters only submit one report (note that the percentages of reports submitted do not always add up to 100% as roughly 10%-30% of reports do not have an ID, depending on the table).

| Table   | Submit <2 Reports                            | Submit 2-29 Reports                          | Submit ≥30 Reports                        |
|---------|----------------------------------------------|----------------------------------------------|-------------------------------------------|
| Table 1 | 391,563 IDs (77.3%), 391,563 Reports (18.7%) | 113,651 IDs (22.4%), 371,653 Reports (17.7%) | 1,336 IDs (0.3%), 666,515 Reports (31.8%) |
| Table 2 | 127,378 IDs (85.4%), 127,378 Reports (56.0%) | 21,589 IDs (14.5%), 69,190 Reports (30.4%)   | 212 IDs (0.1%), 23,008 Reports (10.1%)    |

**Table 65 - Number of Reporters that Submit N Reports**

301. **Q4: To what degree are there coordinated attacks?**
302. This question asks whether there are periods in which Meta receives a large volume of reports in a short period of time (i.e., a “burst”).
303. To identify such bursts, I measured the number of reports received per day (using the field “first\_create\_timestamp”, as used prior). Next, I computed a rolling seven-day window of the mean and standard deviation of reports received per day. Finally, I define a day to be a “burst” if the number of reports

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on that day: (1) is at least 6,000<sup>390</sup>, and (2) exceeds the mean plus two times the standard deviation of the rolling window, which is common practice in my field.<sup>391</sup> Throughout the duration of the reporting data, I analyzed each burst and found five potential attack windows (each lasting roughly 1-2 days), all within August through October, 2021. The table below shows the number of reports received per day with the five attack windows highlighted in yellow.

| Day        | Number of Reports |
|------------|-------------------|
| 2021-08-15 | 1,463 (<0.1%)     |
| 2021-08-16 | 2,451 (<0.1%)     |
| 2021-08-17 | 2,753 (<0.1%)     |
| 2021-08-18 | 9,474 (<0.1%)     |
| 2021-08-19 | 4,510 (<0.1%)     |
| 2021-08-20 | 1,947 (<0.1%)     |
| 2021-08-21 | 1,939 (<0.1%)     |
| 2021-09-05 | 1,471 (<0.1%)     |
| 2021-09-06 | 1,683 (<0.1%)     |
| 2021-09-07 | 1,727 (<0.1%)     |
| 2021-09-08 | 24,825 (0.8%)     |
| 2021-09-09 | 40,365 (1.2%)     |
| 2021-09-10 | 9,601 (<0.1%)     |
| 2021-09-11 | 4,051 (<0.1%)     |
| 2021-09-28 | 470 (<0.1%)       |
| 2021-09-29 | 1,225 (<0.1%)     |
| 2021-09-30 | 2,193 (<0.1%)     |
| 2021-10-01 | 7,061 (<0.1%)     |
| 2021-10-02 | 2,239 (<0.1%)     |
| 2021-10-03 | 1,322 (<0.1%)     |
| 2021-10-04 | 1,111 (<0.1%)     |
| 2021-10-15 | 1,525 (<0.1%)     |
| 2021-10-16 | 1,214 (<0.1%)     |
| 2021-10-17 | 1,228 (<0.1%)     |
| 2021-10-18 | 13,368 (<0.1%)    |
| 2021-10-19 | 1,258 (<0.1%)     |
| 2021-10-20 | 1,611 (<0.1%)     |
| 2021-10-21 | 1,115 (<0.1%)     |
| 2021-10-23 | 1,222 (<0.1%)     |

<sup>390</sup> This threshold was included in the methodology because the data produced by Meta can sometimes be incredibly sparse (i.e., tens or hundreds of reports) for underage reports on certain days. I observed that this threshold captured attack windows that I would consider to be plausible, given Meta documents on attacks. That is, Meta has characterized receiving “~10k reports per day” as baseline behavior with attacks producing an additional “200K in the past 30 days”, with total report counts reaching “2.3M all in one day.” See META3047MDL-065-000002 at -905 and META3047MDL-111-00006892. Thus, 6,000 reports in one day represents a conservative estimate of what Meta may consider to be an attack.

<sup>391</sup> C. Wang et al., Statistical techniques for online anomaly detection in data centers; 12th IFIP/IEEE International Symposium on Integrated Network Management (IM 2011) 385-392, <https://doi.org/10.1109/INM.2011.5990537>.